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REMARKS

Thorough examination and careful review of the application by the Examiner is noted and appreciated.

The indication by the Examiner that claims 14 and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, is further noted and appreciated by the Applicants.

Claims 1-21 are pending herein. The Examiner rejected claims 1-13, 15, 16 and 18-21. The Examiner objected to claims 14 and 17.

Claims 1-15, 17, 18, 20 and 21 have been amended. Dependent claims 22-25 have been added in the application to depend from independent claim 21.

Claims 14 and 17 have been rewritten into independent form. Dependent claims 26-29 have been added in the application to depend from independent claim 14. Dependent claims 30-33 have been added in the application to depend from independent claim 17. The Applicants respectfully submit that claims 14, 17 and 26-33 are separately allowable. A reconsideration for allowance by the Examiner is respectfully requested.

Independent claims 34 and 35 have been added for the Examiner's consideration.

Objections To The Drawings

The Examiner objected to the drawings on the grounds that Figure 1 should be designated by a legend such as –Prior Art– because only that which is old is illustrated. Accordingly, a proposed drawing correction having the legend –Prior Art-- suggested by the Examiner is submitted with the present response. Reconsideration and removal of the Examiner’s objection to the drawings is therefore respectfully solicited.

Objections To The Specification

The Examiner objected to the disclosure on the grounds that paragraph [0018] should explicitly state that the schematic of Figure 1 is “Prior Art”. Accordingly, the Examiner will note that paragraph [0018] has been amended to explicitly state that the schematic of Figure 1 is “Prior Art”. Reconsideration and removal of the Examiner’s objection to the disclosure is therefore respectfully solicited.

Objections To The Claims

The Examiner objected to claims 14 and 20 on the grounds that there is a lack of antecedent basis for the phrase, “the air-moving devices” in claim 14 and a lack of antecedent basis for “The method”, as recited in claim 20. Accordingly, with regard to claim 14, the Examiner will note that amended claim 14 recites the phrase, “a plurality of axial flow fans”, and omits the objected-to phrase, “the air-moving devices”. With regard to claim 20, the Examiner will note that amended claim 20 depends from independent method claim 19 rather than from dependent apparatus claim 18, as was formerly the case, to provide proper antecedent basis for

the phrase, "The method" in amended claim 20. Reconsideration and allowance of amended claims 14 and 20 is therefore respectfully solicited.

Claim Rejections Under 35 USC §102(e)

The Examiner rejected claims 1-7, 12, 18, 19, 20 and 21 under 35 U.S.C. 102(e) as anticipated by McCormick, U.S. pat. no. 6,379,110.

Reference is made to MPEP 2131, which states, "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference". *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). It is respectfully submitted that the McCormick patent fails to anticipate applicant's claims 1-7, 12, 18, 19, 20 and 21 as required by the Federal Circuit in *Verdegaal Bros. v. Union Oil Co. of California*, as follows.

With regard to amended claims 1-7, 12 and 18, the Examiner will note that amended claim 1, from which claims 2-7, 12 and 18 depend, defines a noise reduction system comprising an outer barrel with at least one outer noise silencer in combination with at least one inner noise silencer disposed in an airflow. Because the McCormick patent fails to disclose a noise reduction system comprising at least one inner noise silencer disposed in an airflow, as defined by applicant's amended claim 1, and applicant's claims 2-7, 12 and 18 as dependent from amended claim 1, it is respectfully submitted that the McCormick patent fails to expressly or inherently describe each and every element of applicant's claims 1-7, 12 and 18, as required by the Federal Circuit for anticipation in *Verdegaal Bros. v. Union Oil Co. of California*.

Reconsideration and allowance of applicant's amended claim 1, and amended claims 2-7, 12 and 18 as dependent from amended claim 1, is therefore respectfully solicited.

With regard to claims 19 and 20, it is respectfully submitted that, contrary to the Examiner's assertion, the McCormick patent fails to disclose the step of "reducing airflow noise by resonating an air plug present in the opening forming a mass that resonates on support of a spring force formed by the air enclosed in the cavity", as recited by applicant's method claim 19. It is respectfully submitted that the element designated by reference numeral (228) in the McCormick patent is simply a neck or passage that connects a chamber (226) with an orifice (229) in a throat (215), as discussed in col. 7, lines 10-17, and the McCormick patent fails to disclose the presence of a resonating device in the neck (228). A close review of the McCormick patent reveals that the patent fails to disclose the step of "reducing airflow noise by resonating an air plug present in the opening forming a mass that resonates on support of a spring force formed by the air enclosed in the cavity", as recited by applicant's method claim 19. Therefore, it is respectfully submitted that the McCormick patent fails to expressly or inherently describe each and every element of applicant's method claim 19, as required by the Federal Circuit for anticipation in *Verdegaal Bros. v. Union Oil Co. of California*. Reconsideration and allowance of applicant's method claim 19, and amended claim 20 as dependent from claim 19, is therefore respectfully solicited.

With regard to claim 21, the Examiner will note that amended claim 21, from which added claims 22-25 depend, defines an article of manufacture comprising an outer barrel that defines a noise silencer having a hollow cavity and at least one generally spiral pipe disposed

between an opening through the outer barrel and the hollow cavity. Because the McCormick patent fails to disclose an article of manufacture comprising at least one generally spiral pipe disposed between an opening through an outer barrel and a hollow cavity, as recited by applicant's amended claim 21, it is respectfully submitted that the McCormick patent fails to expressly or inherently describe each and every element of applicant's claim 21, as required by the Federal Circuit for anticipation in *Verdegaal Bros. v. Union Oil Co. of California*. Reconsideration and allowance of applicant's amended claim 21, and allowance of added claims 22-25 as dependent from amended claim 21, is therefore respectfully solicited.

Claims Rejections Under 35 USC §103(a)

The Examiner further rejected claims 8-11 under 35 U.S.C. 103(a) as unpatentable over McCormick as applied to claim 1 above, and further in view of Pla, U.S. pat. no. 5,590,849, on the grounds that it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the structure of McCormick with a plurality of Helmholtz resonators that can be applied to broadband and narrowband applications, thereby providing the advantage of canceling or reducing noise throughout an entire frequency range, as taught by Pla.

Reference is made to MPEP 2143.03, which states, "To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art". *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). It is respectfully submitted that the McCormick patent, taken alone or in combination with the Pla patent, fails to render applicant's amended claims 8-11 obvious as required by the appellate court in *In re Royka*, as follows.

The Examiner will again note that amended claim 1, from which amended claims 8-11 depend, defines a noise reduction system comprising an outer barrel with at least one outer noise silencer in combination with at least one inner noise silencer disposed in an airflow. Because the McCormick and Pla patents, each taken alone or in combination with the other, fail to teach or suggest a noise reduction system comprising an outer barrel with at least one outer noise silencer in combination with at least one inner noise silencer disposed in an airflow, as defined by applicant's amended claim 1 and amended claims 8-11 as dependent from amended claim 1, it is respectfully submitted that the McCormick and Pla patents fail to teach or suggest all of the limitations of applicant's amended claims 8-11, as required for obviousness by the appellate court in *In re Royka*. Reconsideration and allowance of applicant's amended claims 8-11 as dependent from amended claim 1 is therefore respectfully solicited.

The Examiner further rejected claim 13 under 35 U.S.C. 103(a) as unpatentable over McCormick as applied to claim 1 above, and further in view of Blichmann, U.S. pat. no. 5,625,172, on the grounds that it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the structure of McCormick by placing a plurality of noise silencers in series, with respect to the airflow, thereby providing the advantage of eliminating multiple frequencies, as taught by Blichmann.

The Examiner will again note that amended claim 1, from which amended claim 13 depends, defines a noise reduction system comprising an outer barrel with at least one outer noise silencer in combination with at least one inner noise silencer disposed in an airflow. Amended claim 13 requires that the at least one outer noise silencer of amended claim 1

comprise a plurality of noise silencers arranged in a series configuration. Because the McCormick, Pla and Blichmann patents, taken alone or in combination with each other, fail to teach or suggest a noise reduction system comprising an outer barrel with at least one outer noise silencer in combination with at least one inner noise silencer disposed in an airflow, as defined by applicant's amended claim 1, and amended claim 13 as dependent from amended claim 1, it is respectfully submitted that the McCormick, Pla and Blichmann patents fail to teach or suggest all of the limitations of applicant's amended claim 13, as required by the appellate court for obviousness in *In re Royka*. Reconsideration and allowance of applicant's amended claim 13 as dependent from amended claim 1 is therefore respectfully solicited.

The Examiner rejected claim 15 under 35 U.S.C. 103(a) as unpatentable over McCormick as applied to claim 1 above, and further in view of Rice, U.S. pat. no. 5,979,593, on the grounds that it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the structure of McCormick by providing a sound-absorbing material in the noise silencer cavity, thereby providing the advantage of eliminating modal spill-over, as taught by Rice.

It is respectfully submitted that since the McCormick and Rice patents, each taken alone or in combination with the other, fail to teach or suggest a noise reduction system comprising an outer barrel with at least one outer noise silencer in combination with at least one inner noise silencer disposed in an airflow, as defined by applicant's amended claim 1, and amended claim 15 as dependent from amended claim 1, it is respectfully submitted that the McCormick and Rice patents fail to teach or suggest all of the limitations of applicant's amended claim 15, as required

by the appellate court for obviousness in *In re Royka*. Reconsideration and allowance of applicant's amended claim 15 as dependent from amended claim 1 is therefore respectfully solicited.

The Examiner rejected claim 16 under 35 U.S.C. 103(a) as unpatentable over the McCormick and Rice patents as applied to claims 1 and 15 above, and further in view of Aoyama, U.S. pat. no. 5,638,940, on the grounds that it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the structure of McCormick and Rice by making the sound absorbing material in the noise silencer from steel wool, thereby providing the advantage of further reducing noise, as taught by Aoyama.

It is respectfully submitted that since the McCormick, Rice and Aoyama patents, taken alone or in combination with each other, fail to teach or suggest a noise reduction system comprising an outer barrel with at least one outer noise silencer in combination with at least one inner noise silencer disposed in an airflow, as defined by applicant's amended claim 1 and claim 16 as dependent from amended claim 1, it is respectfully submitted that the McCormick, Rice and Aoyama patents fail to teach or suggest all of the limitations of applicant's claim 16, as required for obviousness by the appellate court in *In re Royka*. Reconsideration and allowance of applicant's claim 16 as dependent from amended claim 1 is therefore respectfully solicited.

The Examiner objected to claims 14 and 17 as dependent upon a rejected base claim, but stated that those claims would be allowable if rewritten in independent form to include all of the limitations of the base claim and any intervening claims. Accordingly, the Examiner will note


that claim 14 has been written in independent form to include all of the limitations of claim 1, from which claim 14 formerly directly depended. Added claims 26-29 depend from rewritten claim 14. The Examiner will further note that claim 17 has been rewritten in independent form to include all of the limitations of claim 1, from which claim 17 formerly directly depended. Added claims 30-33 depend from rewritten claim 17. With regard to rewritten claim 14, and added claims 26-29 as dependent therefrom, it is respectfully submitted that the art of record fails to teach or suggest a system comprised of two fans such as disclosed by McCormick that is configured to attenuate noise flowing through an air passage, as noted in the Examiner's indication of allowable subject matter. With regard to rewritten claim 17, and added claims 30-33 as dependent therefrom, it is respectfully submitted that the art of record fails to teach or suggest an inner barrel or at least one noise silencer attached to the air-moving device, as noted in the Examiner's indication of allowable subject matter. Reconsideration and allowance of claim 14, claims 26-29, claim 17, and claims 30-33 is therefore respectfully solicited. Added claims 34 and 35 are submitted for the Examiner's consideration. The Commissioner is hereby authorized to charge Deposit Account No. 06-1510 any fees associated with this amendment.

Every effort has been made to amend applicant's claims in order to define his invention in the scope to which it is entitled. Accordingly, reconsideration and allowance of claims 1-21, and allowance of added claims 22-35, is respectfully solicited.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "Version With Markings To Show Changes Made".

In the event the present invention is not in a condition for allowance for any other reasons, the Examiner is respectfully invited to call the Applicant's representative at (248) 540-4040 so that necessary action may be taken to place the application in a condition for allowance.

Respectfully submitted,



Randy W. Tung (31,311)



VERSION WITH MARKINGS TO SHOW CHANGES MADE

SPECIFICATION

Figure 1 illustrates a general schematic of a possible prior art fuel cell system including a thermal management system.

CLAIMS

1. (Amended) A system for noise reduction from an air-moving device, comprising:
 - a shroud having an inner surface disposed around an area defining an airflow;
 - at least one outer barrel connected to the shroud, the outer barrel having an inner and outer surface extending from the shroud inner surface further defining the airflow; [and]
 - at least one inner noise silencer disposed in the airflow; and
 - at least one outer noise silencer comprising at least one hollow cavity tuned to attenuate predetermined noise frequency ranges within the airflow, the at least one outer noise silencer connected to the airflow by at least one opening of a predetermined size through the outer barrel.
2. (Amended) The system of claim 1 wherein the at least one outer noise [silencers are] silencer is attached to the outer barrel outer surface.
3. (Amended) The system of claim 1 wherein the at least one outer noise [silencers are] silencer is attached to the shroud.

4. (Amended) The system of claim 1 further comprising stator members attached on the outer barrel inner surface.

5. (Amended) The system of claim 1 wherein the at least one outer barrel extends downstream of the air-moving device.

6. (Amended) The system of claim 1 wherein the at least one outer barrel extends upstream of the air-moving device.

7. (Amended) The system of claim 1 wherein the at least one outer barrel extends upstream and downstream of the air-moving device.

8. (Amended) The system of claim 1 wherein the at least one outer noise silencer is a Helmholtz resonator.

9. (Amended) The system of claim 1 wherein the at least one outer noise silencer is a broadband silencer.

10. (Amended) The system of claim 1 wherein the at least one outer noise silencer is a narrowband silencer.

11. (Amended) The system of claim 1 [comprising] wherein said at least one outer noise silencer comprises a plurality of noise silencers for both narrowband and broadband application.

12. (Amended) The system of claim 1 [comprising] wherein said at least one outer noise silencer comprises a plurality of noise silencers arranged in a parallel configuration.

13. (Amended) The system of claim 1 [comprising] wherein said at least one outer noise silencer comprises a plurality of noise silencers arranged in a series configuration.

14. (Amended) [The system of claim 1 wherein the] A system for noise reduction from [air-moving devices are] a plurality of [the] axial flow fans [with corresponding plurality of outer barrels configured to be disposed around the air-moving device airflow] , comprising:

a shroud having an inner surface;

a plurality of outer barrels accommodating the plurality of axial flow fans, respectively, and connected to the shroud, the outer barrels each having an inner and outer surface extending from the shroud inner surface and further defining a corresponding airflow;
and

at least one noise silencer comprising at least one hollow cavity tuned to attenuate predetermined noise frequency ranges within the corresponding airflow, the at least one noise silencer connected to the corresponding airflow by at least one opening of a predetermined size through a corresponding one of the plurality of outer barrels.

15. (Amended) The system of claim 1 wherein the [noise silencer] cavity further comprises a sound absorbing material.

17. (Amended) [The system of claim 1 further comprising] A system for noise reduction from an air-moving device, comprising:

a shroud having an inner surface disposed around an area defining an airflow;

at least one outer barrel connected to the shroud, the outer barrel having an inner and outer surface extending from the shroud inner surface further defining the airflow;

an inner barrel with at least one noise silencer attached to the air-moving device;

and

at least one outer noise silencer comprising at least one hollow cavity tuned to attenuate predetermined noise frequency ranges within the airflow, the at least one outer noise silencer each connected to the airflow by at least one opening of a predetermined size through the outer barrel.

18. (Amended) The system of claim 1 wherein the at least one outer noise silencer further comprises at least one pipe disposed between the opening through the outer barrel and the hollow cavity.

20. (Amended) The method of claim [18] 19 further comprising the step of redirecting the airflow using stator members.

21. (Amended) An [article of manufacture] apparatus for reducing noise from an air-moving device, comprising:

a shroud having an inner surface disposed around an area defining an airflow;

at least one outer barrel connected to the shroud, the outer barrel having an inner and outer surface extending from the shroud inner surface further defining the airflow; [and]

at least one noise silencer comprising at least one hollow cavity tuned to attenuate predetermined noise frequency ranges within the airflow, the noise silencer connected to the airflow by at least one opening of a predetermined size through the outer barrel; and

at least one generally spiral pipe disposed between the opening through the outer barrel and the hollow cavity.